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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/547,273	04/11/2000	Glenn Clement Aikens	RSW9-2000-0024-US1	4966
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IBM CORPORATION 3039 CORNWALLIS RD. DEPT. T81 / B503, PO BOX 12195 RESEARCH TRIANGLE PARK, NC 27709			EXAMINER AILES, BENJAMIN A	
			ART UNIT 2442	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

RSWIPLAW@us.ibm.com

Office Action Summary

Application No.

09/547,273

Applicant(s)

AIKENS ET AL.

Examiner

BENJAMIN AILES

Art Unit

2442

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4-7, 11, 12 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-7, 11, 12 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/ISA-93)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

1. This action is in response to correspondence filed 05 December 2005.
2. Claims 1, 4-7, 11, 12 and 19 remain pending.

Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The phrase "computer useable medium" in claim 19 is not found to have proper antecedent basis in the specification; however it is necessary to use this terminology in order to properly define the claim within the boundaries of statutory subject matter. In order to overcome the object, an amendment to the specification is necessary constituting a non-exhaustive statement of what the "computer useable medium" would be as it would have been known to one of ordinary skill in the art at the time of the invention, in order to verify that the term "computer useable medium" could not be taken in the context of non-statutory subject matter.

Claim Rejections - 35 USC § 101

4. Claim 19 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Regarding claim 19, the claim recites "computer usable medium..." The "computer usable medium" is given broadest reasonable interpretation in view of what is considered well known in the art. The broadest reasonable interpretation of a claim drawn to a computer readable medium, in this case a "medium," typically covers forms of non-transitory tangible media and transitory propagating signals per se in view of the ordinary and customary meaning of

computer readable media. The medium as claimed is not limited to tangible embodiments and therefore the claim is deemed non-statutory. The claim may be amended to narrow the claim to cover only statutory embodiments to overcome the rejection under 35 USC 101 by adding the limitation "non-transitory" to the claim so the claim would read "...a non-transitory computer useable medium..."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 4-5, 7, 11, 12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brichta (US 5,864,483) in view of Engel (US 5,615,323) in further view of Sweet (US 6,836,800).
6. Regarding claim 1, Brichta teaches a computer implementation method (col. 9, ll. 28-34) of monitoring network performance services (col. 1, ll. 37-50), having established performance requirements criteria by the provider or customers (col. 1, ll. 10-19 and 61-65);

monitoring a network performance measurement on a recurring basis to obtain samples of the metric value (Brichta, samples: col. 3, ll. 36-49, monitoring; col. 3, ll. 54-56, col. 6, line 67 - col. 7, line 5, and metric values obtained on recurring basis: col. 7, ll. 15-37);

determining a "trend" value in actual services based on obtained samples of the metric (Brichta: identify patterns, col. 2, ll. 20-39 and col. 8, ll. 60-63), said determining step including the further steps of:

analyzing a set of samples collected over a predetermined sampling time for determining for each occurrence of the sample whether the analyzed sample satisfies a predetermined level (i.e. a sample "set" size, col. 2, ll. 2-17, predetermined acceptable values col. 3, ll. 60-67, sample population rolling "over time" time period, col. 7, ll. 30-37, determine whether the analyzed sample satisfies a predetermined level over time, col. 9, ll. 16-27);

determining predetermined sample criteria including an upper and lower control limits associated with said metric value (Brichta: col. 7, ll. 6-49) and determining whether the number of occurrences in the sample population set satisfy a predetermined sample criteria, said predetermined criteria compares the number of occurrences with an expected number of occurrences (Brichta: col. 2, ll. 34-39, col. 1, line 64 – col. 2, line 2); however, Brichta does not teach the use of linear regression to determine said trend nor the time when the services will not meet a performance requirement when determined trend continues. Engel teaches obtaining samples of metric values (col. 2, ll. 13-28) and determining a trend based on the obtained samples of metric values using linear regression (col. 9, ll. 43-46 and col. 10, ll. 53-56), specifically, monitoring performance parameters (e.g. network performance parameters col. 10, ll. 57-65) over a period of time to obtain averages of measured network performance parameters, using linear regression analysis to determine a trend in the

computed averages (col. 9, ll. 43-65), including samples obtained over a recurring period of time (col. 2, ll. 13-28); and determining the time at which services will not meet a predetermined performance requirement (e.g. threshold) when the trend continues (col. 10, ll. 1-37 and col. 5, ll. 33-58); however although Engel suggests limiting the amount of data collected (col. 9, ll. 27-29), Engel does not teach added limitation, i.e. determining if a minimum number of samples are met within a sample set.

Sweet teaches terminating the step of determining a trend (i.e. signature detection technique) if a set of samples fails to meet a predetermined sample criteria, such as requiring a minimum number of samples (col 8/lines 43-60).

It would have been obvious to one ordinary skilled in the art at the time the invention was made given Brichta's teachings for predicting the time when the current trend in the network performance will exceed a defined threshold including analyzing occurrences of a stable sample set population, the teachings of Engel for predicting when network performances with exceed predetermined thresholds, would be readily apparent. Motivation to combine the references teachings would be accurately diagnose system hardware bottlenecks, for longer-term trends preventing or decreasing adverse identified effects such as improper system design, improper software configuration, or excessive usage of human resources, noted by Engel, using stabilized a sample population sets that eliminate occurrences in said sample that reflect anomalies, deriving trends based on samples attributable to "normal" or "common" causes. One of ordinary skill would further be motivated to include the teachings of Sweet, motivation would be because in doing so an effective detection of a periodic pattern, i.e. trend is

obtained using a well known sampling theorem, as taught by Sweet, further applicable to any point the network, as noted by Sweet.

7. Regarding claim 4, Brichta teaches determining whether the standard deviation of the set is greater than a predetermined amount or proportion "percentage" of the mean of the sample (Brichta: col 10/lines 30- 40, and average of the mean and standard deviation col 2/lines 18-38).

8. Regarding claim 5, Brichta teaches generating an alert if the performance violation time is predicted to fall within a fixed time window beginning at the current time (Brichta: providing an alert, see col 1/lines 61-64 and col 9/lines 11-15, a predetermined criteria e.g. response time, turnaround time indicated that performance violation time specifies control values of a fixed time window, see col 5/lines 64-col 16/line 14 and performance time falling outside the fixed window (Brichta: col 7/lines 3 8-49).

9. Regarding claim 7, claim 7 comprises limitations discussed on claim 1, same rationale of rejection is applicable. Further limitations include the steps of:

monitoring the provided service to obtain periodically or at predefined periods, i.e. on a recurring basis, sets of network performance samples representing actual network performance (Brichta samples: col 3/lines 46:49, actual network performance: col 3/line 54-56 monitoring: col 6/lines 67-col 7/line 5, recurring: col 7/lines 29-37);

using only the obtained sets of samples having the minimum requirement number of samples (Sweet: col 8/lines 43-60) and linear regression (Engel: col. 9, lines 43-65) to generate a mathematical representation of a pattern or trend value in the network performance represented by obtained network performance measurements or

metric (Sweet: signature value performance col 8/lines 43-60 and Engel: col. 9, lines 43-65);

calculating predefined statistical parameters of each obtained set of samples, (e.g. mean and standard deviation) (Brichta col 7/lines 15-37) and determining a standard deviation ratio value of the predefined statistical parameters (Sweet: col 5/lines 17-20, step 3020 of fig. 5);

determining whether the ratio value calculated statistical parameter meet predefined threshold requirement value (Sweet: col 5/line 21-22, step 3040 of Fig. 5);

terminating the step of generating a mathematical representation of a trend in the network performance metric when the calculated statistical parameter for obtained set of samples fails to meet the predefined threshold requirement (Brichta: eliminating the occurrences of sample of metric values that do not satisfy said predetermined a criteria, i.e. not using analyzing any of theses occurrences or using these occurrences for further calculations col 11/lines 2-32);

using a mathematical representation (Fig. 6) predicting the time when the network performance metric will exceed a defined threshold if the trend continues (Engel: col. 10, ll. 1-37 and col. 5, ll. 33-58);

generating an alert if the predicted future time (elapsed time) is within a fixed future time window (predetermined time) from the current time (Brichta alert: col 9/lines 11-15).

10. Regarding claim 11, the calculated statistical parameters comprise the standard deviation and mean of the set of samples (Brichta: col 7/lines 17-28) and the predefined

threshold requirement requires that the standard deviation be no greater than a predetermined amount above (percentage) the mean (Brichta: col 2/lines 23-27, col 1/lines 46-49).

11. Regarding claim 12, Brichta teaches a system for providing an alert indicating a predicted violation of a predetermined network performance requirement (col. 1, ll. 10-19 and 61-65), the system comprising:

a performance monitor which obtains sets of samples of a predefined service metric on a recurring basis (Brichta, samples: col. 3, ll. 36-49, monitoring; col. 3, ll. 54-56, col. 6, line 67 - col. 7, line 5, and metric values obtained on recurring basis: col. 7, ll. 15-37);

a sample processor which receives the obtained sets of samples and generates a mathematical representation of a current trend in service metric values if the obtained set of samples contains at least a predetermined, minimum number of samples (Brichta: identify patterns, col. 2, ll. 20-39 and col. 8, ll. 60-63; i.e. a sample "set" size, col. 2, ll. 2-17, predetermined acceptable values col. 3, ll. 60-67, sample population rolling "over time" time period, col. 7, ll. 30-37, determine whether the analyzed sample satisfies a predetermined level over time, col. 9, ll. 16-27);

logic elements which use the generated mathematical representation (Fig. 6) to predict when the service metric will cross a defined threshold if the trend represented by the mathematical model continues (Engel: col. 10, ll. 1-37 and col. 5, ll. 33-58);

an alert generator for generating an alert if the determined time is less than a predetermined time from the current time (Brichta alert: col 9/lines 11-15).

Brichta does not teach the use of linear regression to determine said trend nor the time when the services will not meet a performance requirement when determined trend continues. Engel teaches obtaining samples of metric values (col. 2, ll. 13-28) and determining a trend based on the obtained samples of metric values using linear regression (col. 9, ll. 43-46 and col. 10, ll. 53-56), specifically, monitoring performance parameters (e.g. network performance parameters col. 10, ll. 57-65) over a period of time to obtain averages of measured network performance parameters, using linear aggression analysis to determine a trend in the computed averages (col. 9, ll. 43-65), including samples obtained over a recurring period of time (col. 2, ll. 13-28); and determining the time at which services will not meet a predetermined performance requirement (e.g. threshold) when the trend continues (col. 10, ll. 1-37 and col. 5, ll. 33-58); however although Engel suggests limiting the amount of data collected (col. 9, ll. 27-29), Engel does not teach added limitation, i.e. determining if a minimum number of samples are met within a sample set.

Sweet teaches terminating the step of determining a trend (i.e. signature detection technique) if a set of samples fails to meet a predetermined sample criteria, such as requiring a minimum number of samples (col 8/lines 43-60).

It would have been obvious to one ordinary skilled in the art at the time the invention was made given Brichta's teachings for predicting the time when the current trend in the network performance will exceed a defined threshold including analyzing

occurrences of a stable sample set population, the teachings of Engel for predicting when network performances with exceed predetermined thresholds, would be readily apparent. Motivation to combine the references teachings would be accurately diagnose system hardware bottlenecks, for longer-term trends preventing or decreasing adverse identified effects such as improper system design, improper software configuration, or excessive usage of human resources, noted by Engel, using stabilized a sample population sets that eliminate occurrences in said sample that reflect anomalies, deriving trends based on samples attributable to "normal" or "common" causes. One of ordinary skill would further be motivated to include the teachings of Sweet, motivation would be because in doing so an effective detection of a periodic pattern, i.e. trend is obtained using a well known sampling theorem, as taught by Sweet, further applicable to any point the network, as noted by Sweet.

12. Regarding claim 19, this claim comprises the article of manufacture comprising a computer useable medium having a computer readable program embodied in said medium, wherein the computer readable program when executed in the computer causes the computer to perform the method discussed on claim 1 and the system discussed on claims 7, same rationale of rejection is applicable.

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brichta-Engel in view of Sweet in further view of Baumann et. al. (Baumann) U.S. Patent No. 5,469,148.

14. Regarding claim 6, Brichta-Engel teaches trend based on the obtained samples of metric values using linear regression monitoring actual service performance

parameters (Engel: col. 10, ll. 1-37 and col. 5, ll. 33-58), and determining that the performance time falls outside the a time window (Brichta: col 7/lines 38-49, exceeding unacceptable levels, i.e. outside col 2/lines 33-39, criteria specifies a minimum and maximum, i.e. col 3/lines 60-67), including determining where the calculated upper and lower control limit to determine occurrences outside a range (col 7/lines 38-42), however the above-mention prior art does not teach canceling a previously generated alert when a performance time will not met a time window criteria.

Baumann teaches a monitoring mechanism configured to canceling a previously generated error signal in absence of the occurrence that a performance violation time has occurred within a fixed period of time (col 1/lines 1-9, 39-58, cancel the alarm signal, col 5/lines 7-17);

It would have been obvious to one ordinary skilled in the art at the time the invention was made to include means for canceling a previously generated error signal in absence of the occurrence that a performance violation time has occurred within a fixed period of time, as taught by Baumann, or to further cancel a previously generated alert in the absence of a prediction that the performance violation time will fall outside the fixed time window, as taught by Brichta. Motivation would be to ensure that only deviation in performance occurring over a predetermined period of time are reported before engaging in corrective measures, as suggested by Baumann.

Response to Arguments

15. Applicant's arguments, see Remarks, filed 05 December 2005, with respect to the rejection of claims 1, 4-5, 7, 11 and 19 under 103(a) in view of Brichta (US 5,864,483), McKnight (US 6,557,035) and Sweet (US 6,836,800) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Brichta (US 5,864,483), Engel (US 5,615,323) and Sweet (US 6,836,800).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin Ailes whose telephone number is (571)272-3899. The examiner can normally be reached Monday-Friday, IFP Hoteling schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Pwu can be reached on 571-272-6798. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. A. A./
Examiner, Art Unit 2442

/Jeffrey Pwu/
Supervisory Patent Examiner, Art Unit 2446

